



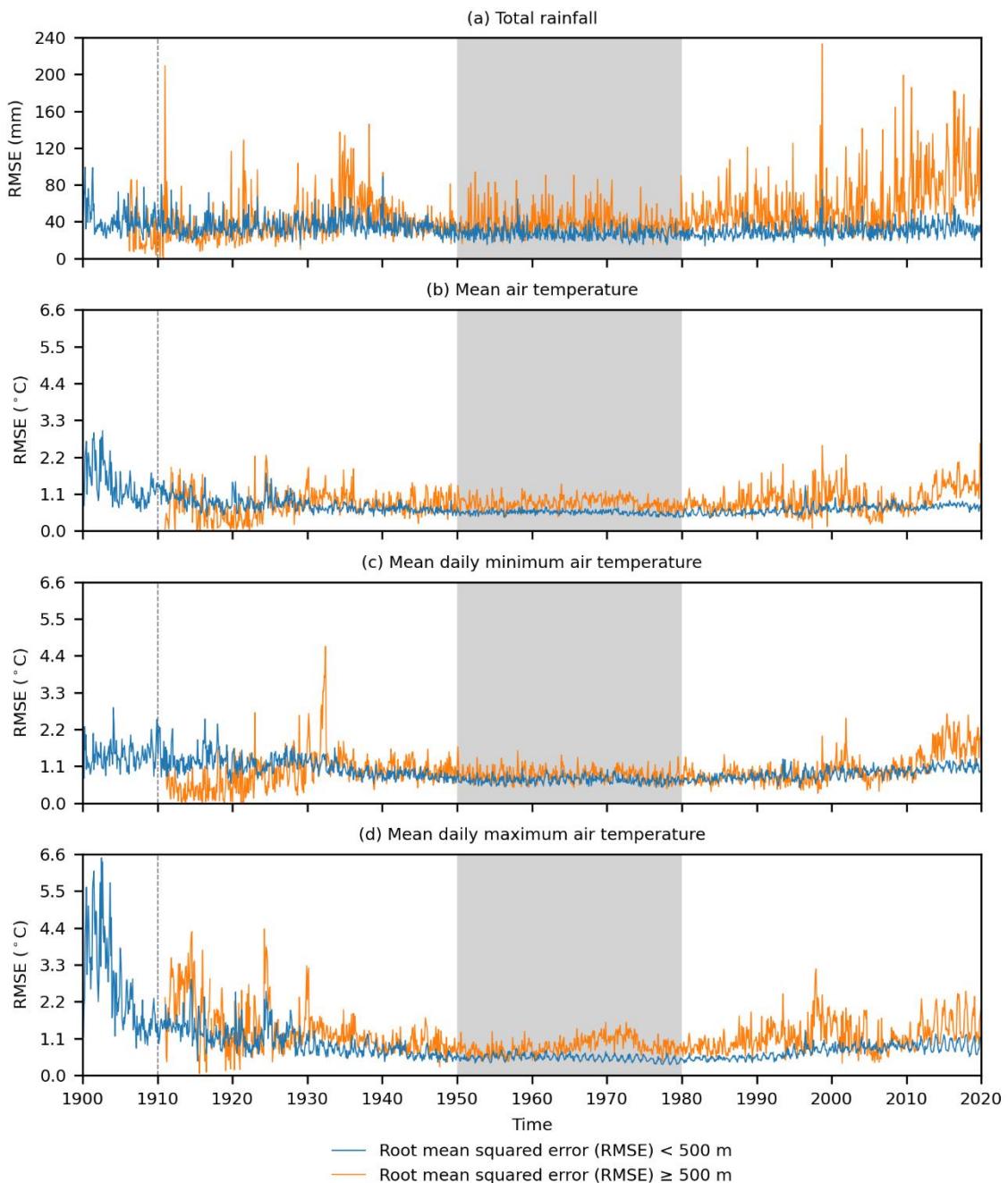
*Supplement of*

## **HOTRUNZ: an open-access 1 km resolution monthly 1910–2019 time series of interpolated temperature and rainfall grids with associated uncertainty for New Zealand**

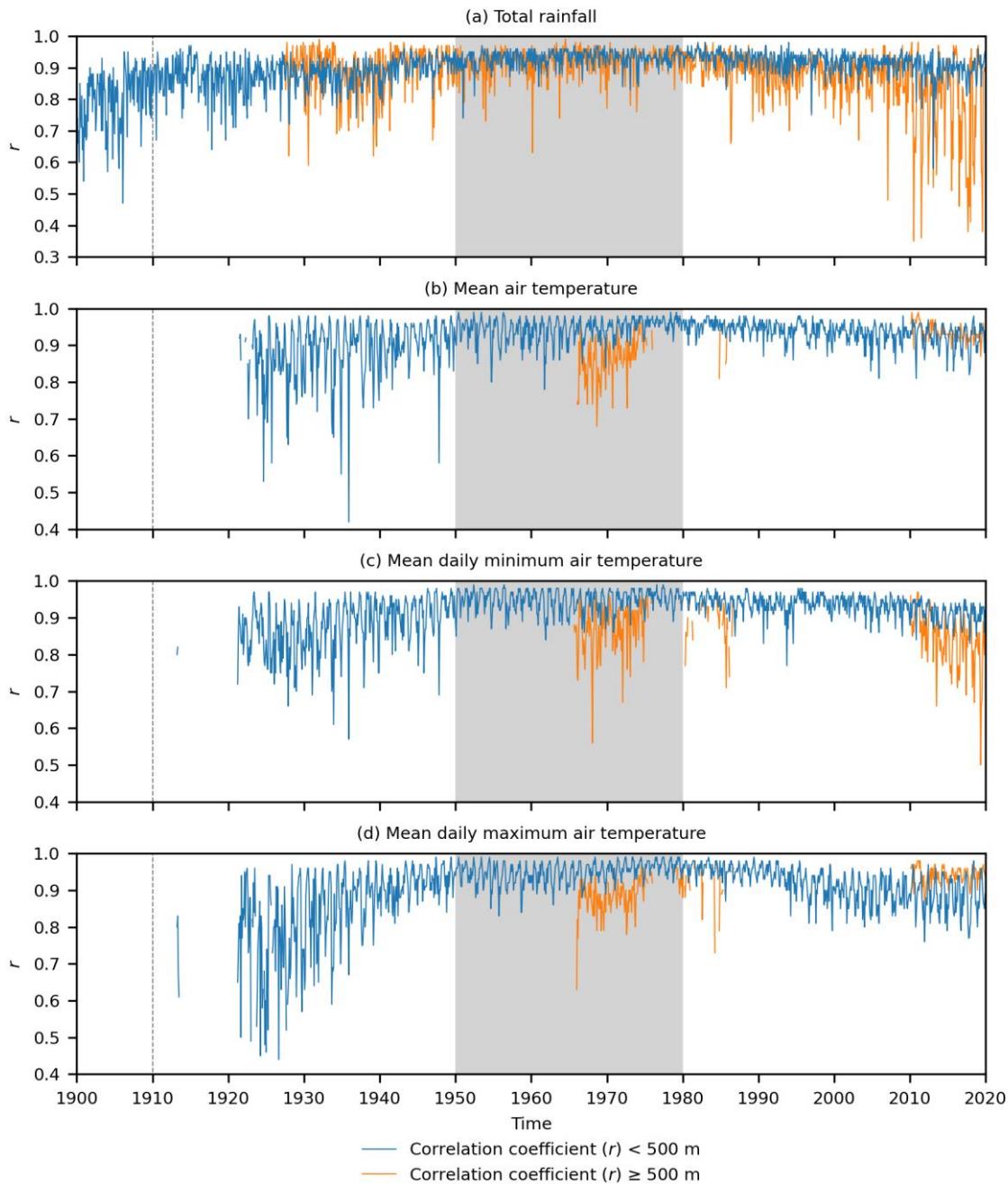
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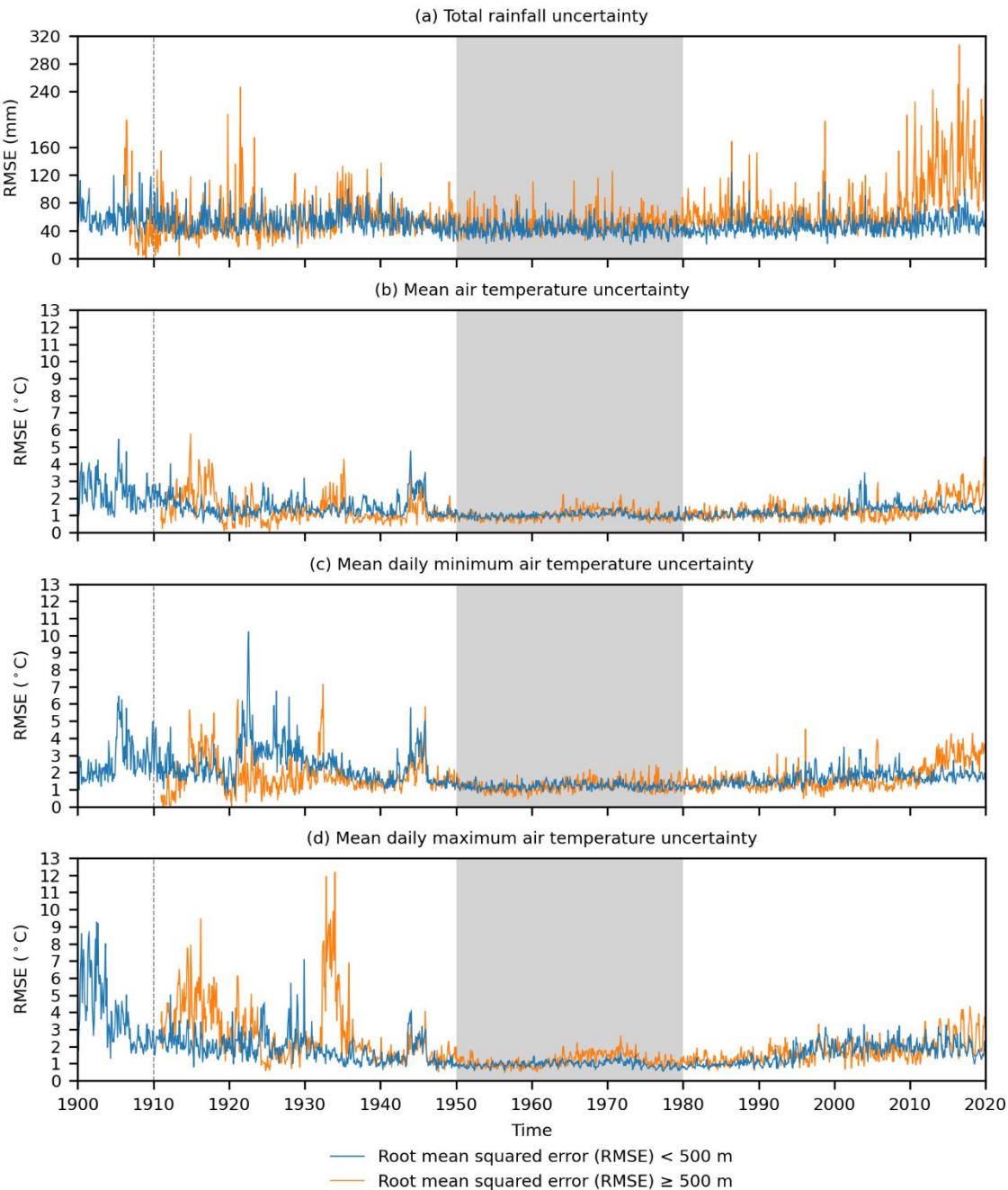
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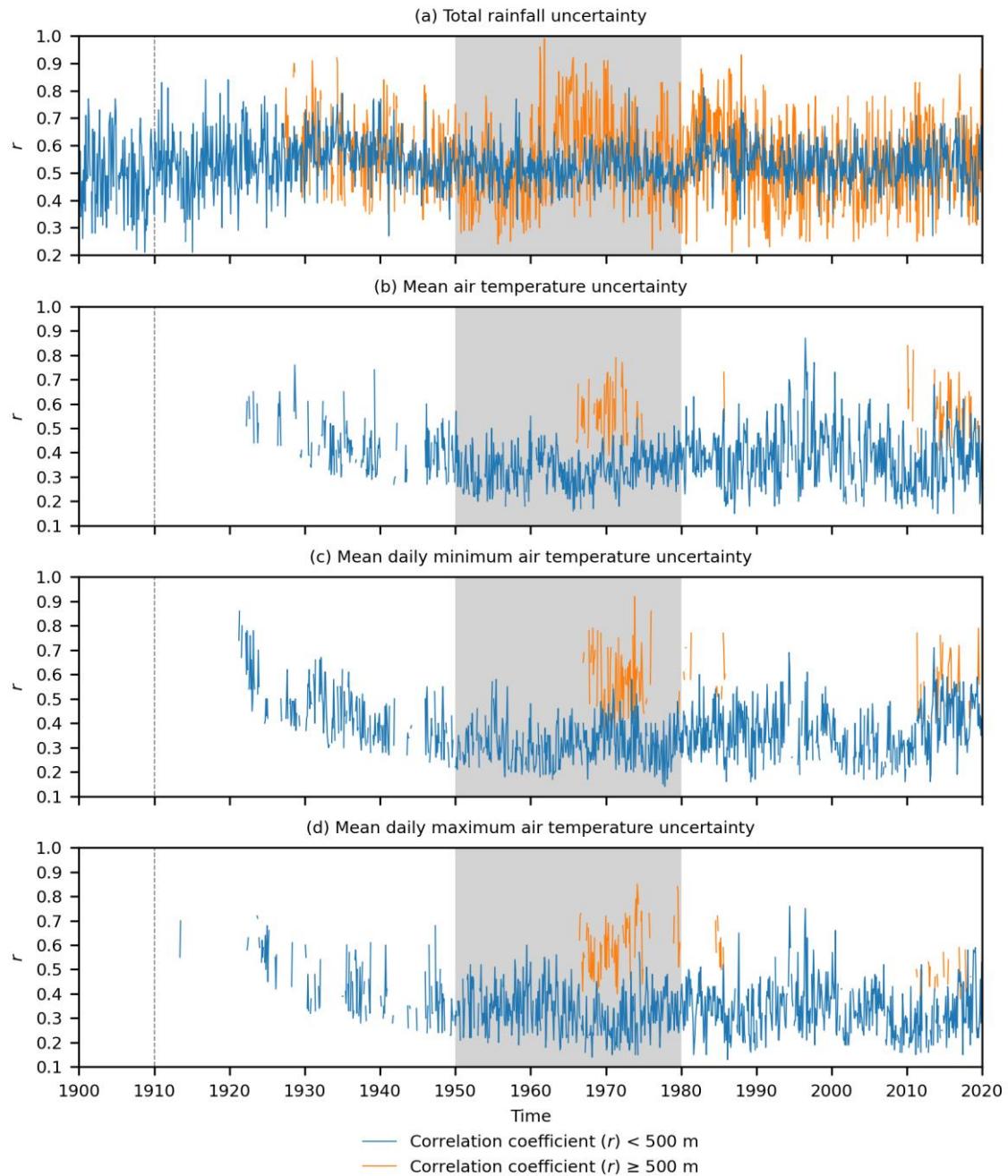
5 **Figure S1: Monthly time-series of the cross-validated root mean squared error (RMSE) of climatologically aided natural neighbour interpolation across New Zealand at < 500 m elevation and  $\geq 500$  m elevation for (a) total rainfall (mm), (b) mean air temperature (°C), (c) mean daily minimum air temperature (°C), and (d) mean daily maximum air temperature (°C). The grey areas show the period (1950-1980) over which the climatologies used to aid interpolation apply, and the dashed lines indicate the temporal limit of reliable data.**



10 **Figure S2: Monthly time-series of the cross-validated correlation between actual and climatologically aided natural neighbour interpolation values across New Zealand at  $< 500$  m elevation and  $\geq 500$  m elevation for (a) total rainfall (mm), (b) mean air temperature ( $^{\circ}\text{C}$ ), (c) mean daily minimum air temperature ( $^{\circ}\text{C}$ ), and (d) mean daily maximum air temperature ( $^{\circ}\text{C}$ ). Correlation coefficients are only shown for months where  $n \geq 20$  and  $p \leq 0.05$ . The grey areas show the period (1950-1980) over which the climatologies used to aid interpolation apply, and the dashed lines indicate the temporal limit of reliable data.**



15 **Figure S3:** Monthly time-series of the cross-validated root mean squared error (RMSE) of climatologically aided natural neighbour uncertainty across New Zealand at  $< 500$  m elevation and  $\geq 500$  m elevation for (a) total rainfall (mm), (b) mean air temperature ( $^{\circ}\text{C}$ ), (c) mean daily minimum air temperature ( $^{\circ}\text{C}$ ), and (d) mean daily maximum air temperature ( $^{\circ}\text{C}$ ). The grey areas show the period (1950-1980) over which the climatologies used to aid interpolation apply, and the dashed lines indicate the temporal limit of reliable data.



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Figure S4: Monthly time-series of the cross-validated correlation between climatologically aided natural neighbour interpolation errors and estimated uncertainty across New Zealand at  $< 500$  m elevation and  $\geq 500$  m elevation for (a) total rainfall (mm), (b) mean air temperature ( $^{\circ}\text{C}$ ), (c) mean daily minimum air temperature ( $^{\circ}\text{C}$ ), and (d) mean daily maximum air temperature ( $^{\circ}\text{C}$ ). Correlation coefficients are only shown for months where  $n \geq 20$  and  $p \leq 0.05$ . The grey areas show the period (1950-1980) over which the climatologies used to aid interpolation apply, and the dashed lines indicate the temporal limit of reliable data.